REMARKS

The abstract and specification have been amended in order to correct grammatical and idiomatic errors contained therein. No new matter has been added.

In order to expedite the prosecution of the present application, the subject matter of Claim 2 has been incorporated into Claim 1. Accordingly, Claim 2 has been canceled. Newly presented Claims 14 and 15 are directed to specific embodiments of the present invention. No new matter has been added.

Claims 1-5 have been rejected under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as being obvious over either of Francotte or JP 2001-296288 (JP '288). Claim 3 has been rejected under 35 USC 103(a) as being unpatentable over JP '288 in view of Francotte. Claims 1-5 have been rejected under 35 USC 102(e) as anticipated by or, in the alternative, under 35 USC 103(a) as being obvious over Ohnishi. Claim 3 has been rejected under 35 USC 103(a) as being unpatentable over Ohnishi in view of Francotte. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

The presently claimed invention is directed to a separating agent for an enantiomeric isomer which comprises an optically active polymer compound carried on a porous carrier. The optically active polymer compound has been insolubilized through exposure to at least one of γ-ray and electron beam radiation. As discussed in the present specification, the present invention provides a separating agent for an enantiomeric isomer having a high optical resolution power together with a high solvent resistance. The present invention avoids the problems of conventional separating agents which can only be used under restrictive separation conditions due to the elimination of solvents capable of dissolving the optically active polymer compounds being used

and the limiting of washing fluids that can be used in removing contaminants strongly adsorbed on the separating agent. Additionally, the present invention solves the problems associated with the preparation of a special isocyanate derivative in that the production process is complicated and requires a great deal of steps and the photochemically cross-linking of a polysaccharide derivative having no photopolymerizable functional groups involves the very difficult control of a cross-linking rate. The method does not allow the polysaccharide derivative to be produced with a good reproducibility and the method has a problem of a great difficulty in mass production due to a low light transmittance thereof.

The present invention is based on the discovery that by insolubilizing an optically active polymer compound on a support through exposure to γ-ray or electron beam radiation, the polymer is cross-linked to yield a separating agent having an unexpectedly good separation factor. It is respectfully submitted that the prior art cited by the Examiner does not disclose the presently claimed invention.

The Francotte et al reference discloses photochemically cross-linked polysaccharide derivatives which can be used as carriers for the chromatographic separation of enantiomers. As the radiation to cure the cross-linked polysaccharide derivatives, ultraviolet radiation is used in the Examples. As will be discussed below, a separating agent prepared through the use of ultraviolet radiation has an inferior separation factor to that of the present invention.

JP '288 and the Ohnishi reference both disclose fillers for separating optical isomers by liquid chromatography having a primary constituent of a polysaccharide derivative which can be bonded on a support by chemical bonding, irradiation with γ-rays, electromagnetic irradiation with microwaves or a radical reaction using a radical initiating agent. There is no specific example in either of these references of the use of γ-rays to immobilize the polysaccharide derivative on a

support. Therefore, as will be shown below, given the unexpectedly high separating factor associated with the presently claimed invention, the patentability of the presently claimed invention over these references will be established.

The Voute reference has been cited by the Examiner as disclosing that gamma radiation can be used to cross-link polysaccharide derivatives. However, as discussed above, given the unexpectedly high separating factor associated with the separating agent of the present invention, it is respectfully submitted that objective evidence is of record in the present application which is sufficient to rebut any showing of prima facie obviousness under 35 USC 103(a).

Enclosed herewith for the Examiner's benefit is a Table in which a comparison is shown between the Examples of the present invention and Comparative Examples contained in the present application and the Francotte et al reference. As shown by the results contained in the enclosed Table, the separating agent according to the present invention which was cross-linked by gamma rays had far superior separating properties than comparative separating agents which would not cross-link and the separating agents of Francotte et al which were cross-linked by ultraviolet light. This is clearly unexpected in light of the prior art cited by the Examiner and establishes the patentability of the presently claimed invention thereover.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,

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Encl: Table
Replacement Abstract
Clean Substitute Specification
Marked-Up Substitute Specification
Postal Card

136.07/05

TABLE

		U.S. 10/533 217						Francotte
		Ex. 1	Ex. 2	Ex. 3	Comparative Ex. 1	Ex. 4	Comparative Ex. 2	Ex. 18
	Separating Agent (crosslinking method)	AS (γ ray)	AS (γ ray)	AS (γ ray)	AS (not crosslinked)	AS (γ ray) washed with THF	AS (not crosslinked) washed with THF	AS (UV)
α	Racemic modification 1	1.34	1.35	1.34	1.47	1.0	1.0	--
	Racemic modification 2	2.3	2.31	2.34	2.47	1.58	1.0	1.40
	Racemic modification 3	2.41	2.44	2.4	2.26	2.05	1.0	1.85
	Racemic modification 4	2.12	2.12	2.09	2.88	1.68	1.0	1.50

		U.S. 10/533 217				Francotte
		Ex. 6	Comparative Ex. 3	Ex. 7	Comparative Ex. 4	Ex. 17
	Separating Agent (crosslinking method)	AD (γ ray)	AD (not crosslinked)	AD (γ ray) washed with THF	AD (not crosslinked) washed with THF	AD (UV)
α	Racemic modification 1	3.24	3.11	2.56	1.0	1.61
	Racemic modification 2	1.24	1.28	1.0	1.0	1.0
	Racemic modification 3	1.71	1.79	1.42	1.0	--
	Racemic modification 4	1.3	1.31	1.19	1.0	--

AS: Amylose tris[(S)-phenylethylcarbamate] AD: Amylose tris(3,5-dimethylphenylcarbamate)